

STORAGE DEVELOPER CONFERENCE



BY Developers FOR Developers

A SNIA[®] Event

Virtual Conference
September 28-29, 2021

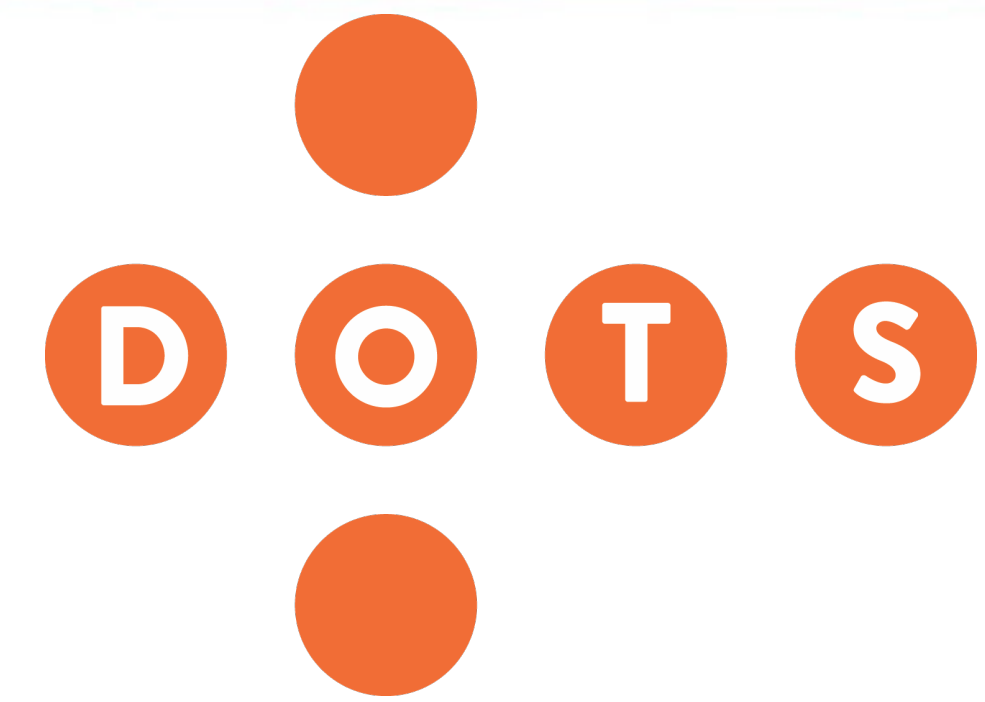
DOTS

A Simple, Visual, Method for Preserving Digital Information

Rob Hummel, President
Group 47

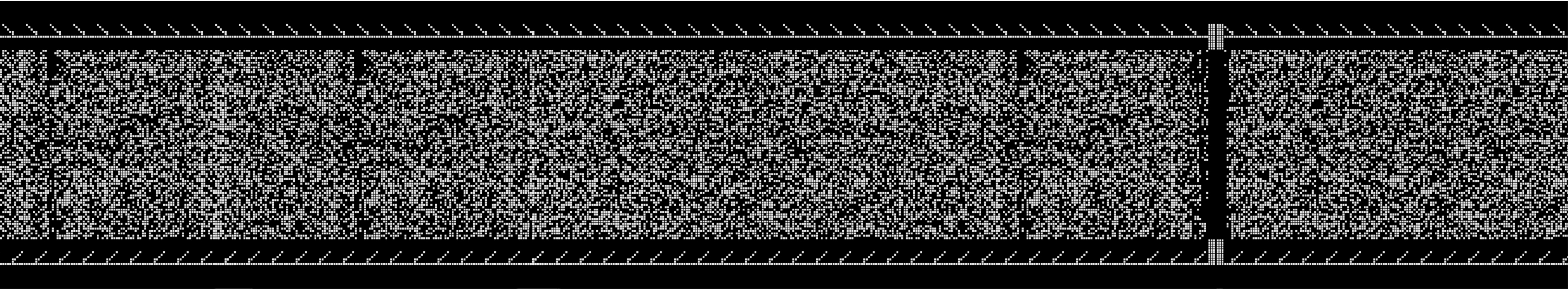
Bit Plane Image Archiving with

Future-Proof Archiving for Digital Information



The Only True Optical/Visual Solution for Archiving Digital Data

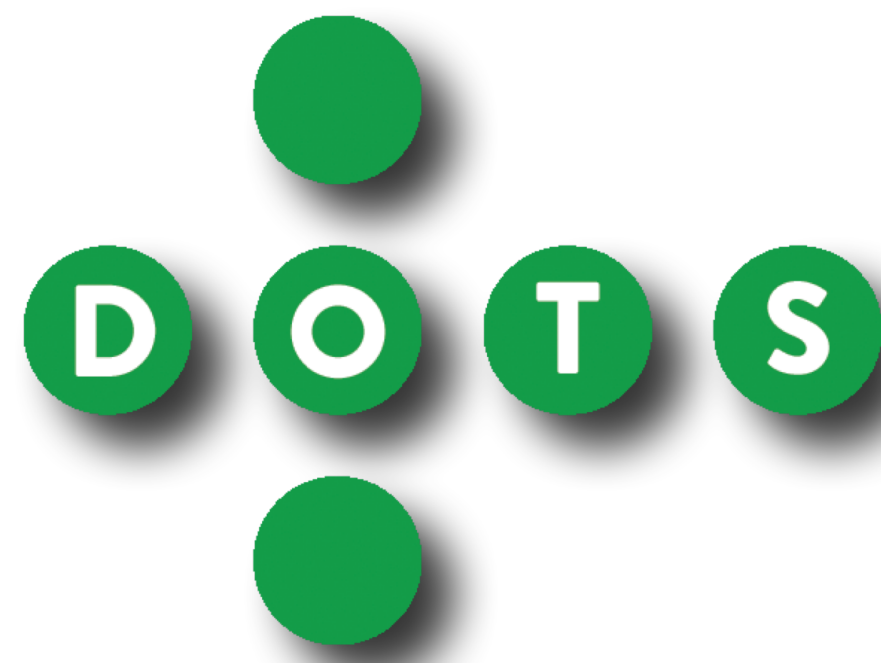
DOTS - Digital Optical Technology System



The only digital storage media that stores data visually, *and*
can be easily retrieved using light and a lens

DOTS Design Principles

- Archival for no less than 500 years
- Data can be seen, and recorded in human readable form
- Data is retrieved without sophisticated technology
- Immune to magnetism & can withstand environmental stress
- DOTS can be stored anywhere from -6° to 66° C (21° - 150° F)
- Same form factor as existing LTO data tape systems
- Hardware devices are backwardly compatible for all previous generations

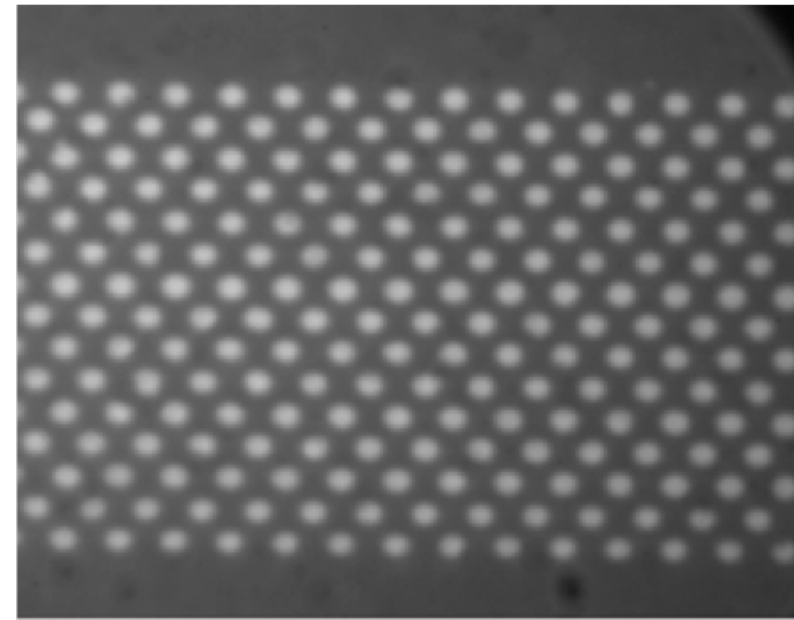


is Green Technology

DOTS eliminates media & energy waste from forced migration, costly power requirements, and rigid environmental control demands

DOTS What is it?

Microscopic photo
of DOTS media test



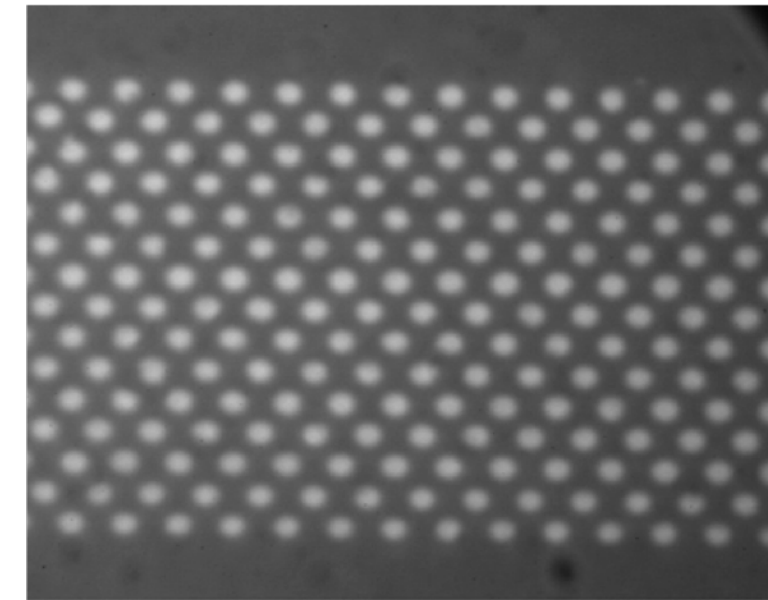
Spots are 1 micron in size
[.00004 inches]

- DOTS is a phase change media composed of a patented metallic alloy sputtered on an archival polyester base (e.g.: Aramid, Mylar™, Estar™).
- Standard manufacturing techniques are used to create DOTS tape.
- DOTS media and prototype recorder/readers were successfully built by early 2001.
- Group 47's new design was proven in a contract with the CIA.
- Group 47 has dramatically improved and simplified the hardware design with an engineering upgrade/refresh, and strengthening of the patent portfolio.
- Components for DOTS recorder/readers employ off-the-shelf imaging and laser technologies.

DOTS What is it?

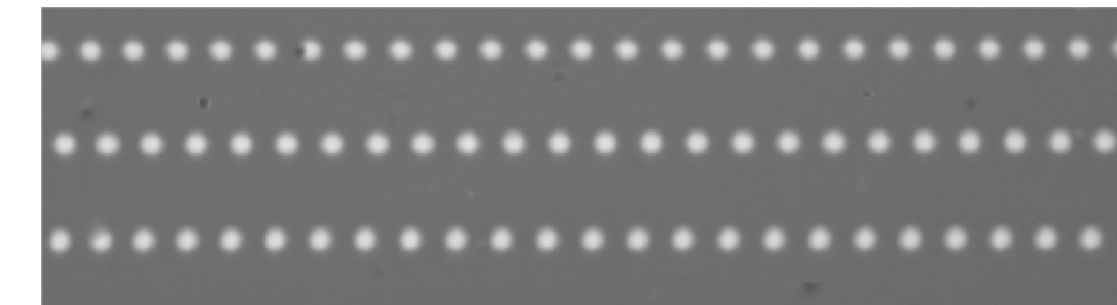
2001

Kodak Research Labs
1 micron spots utilizing 16
individual lasers



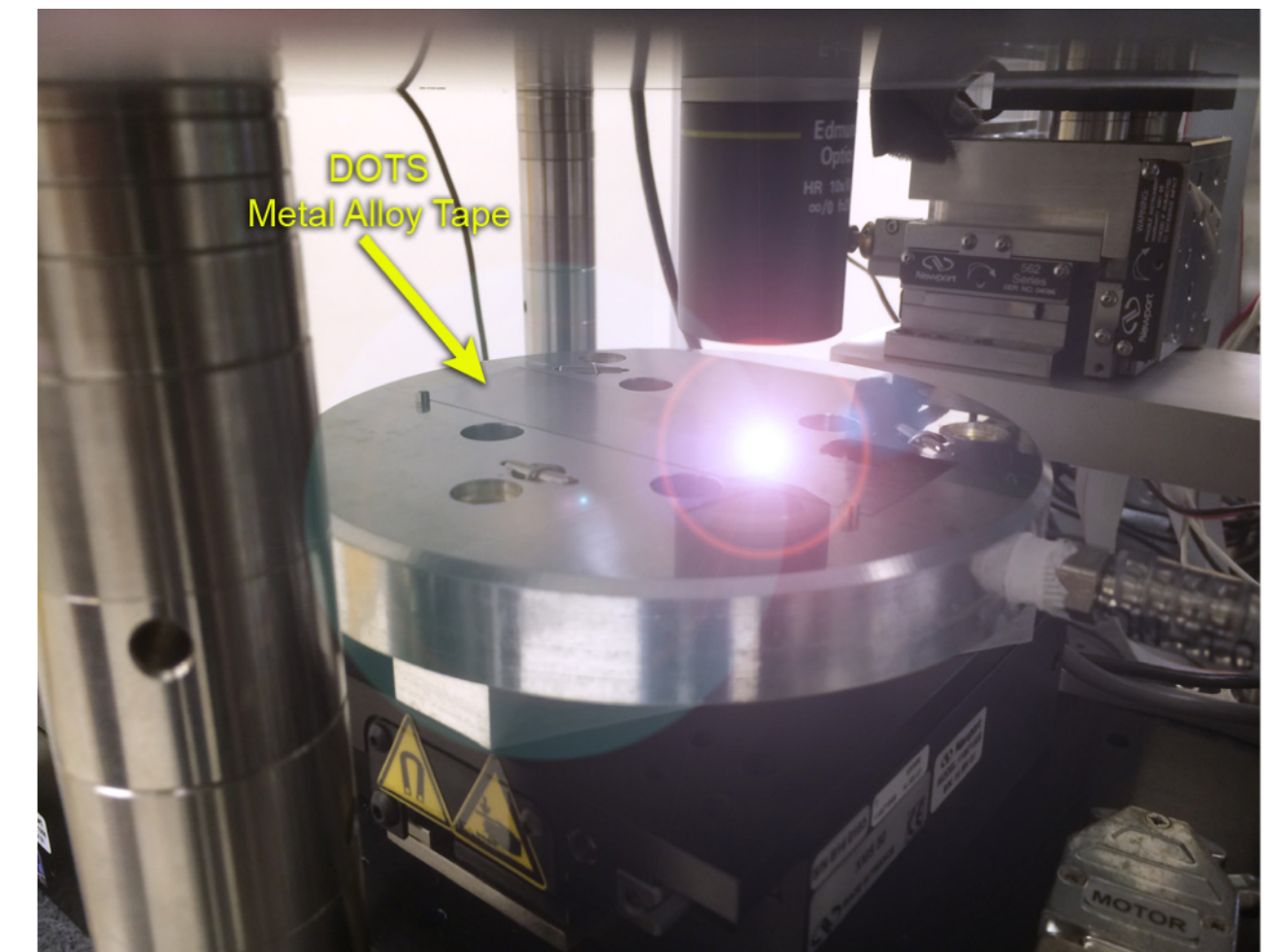
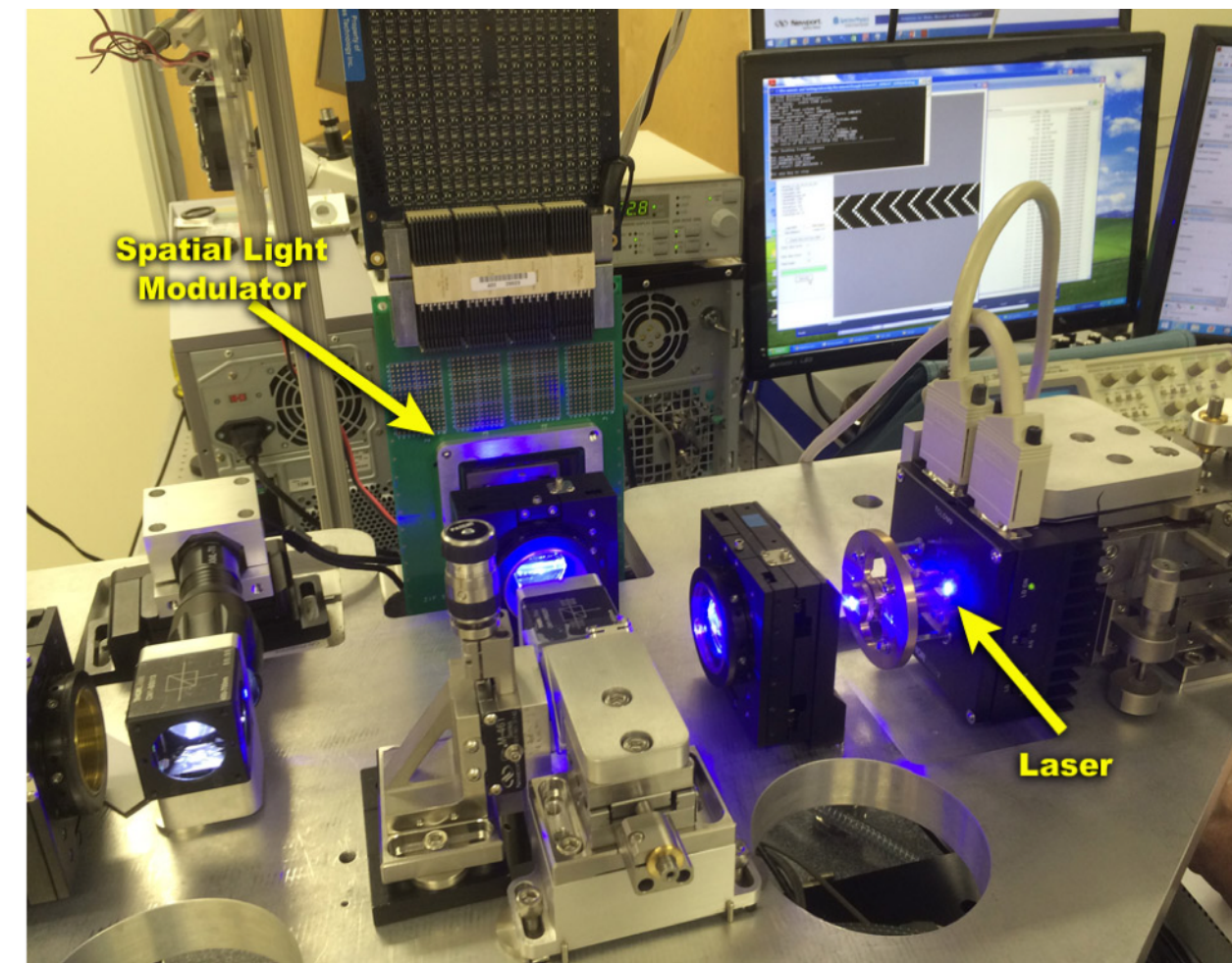
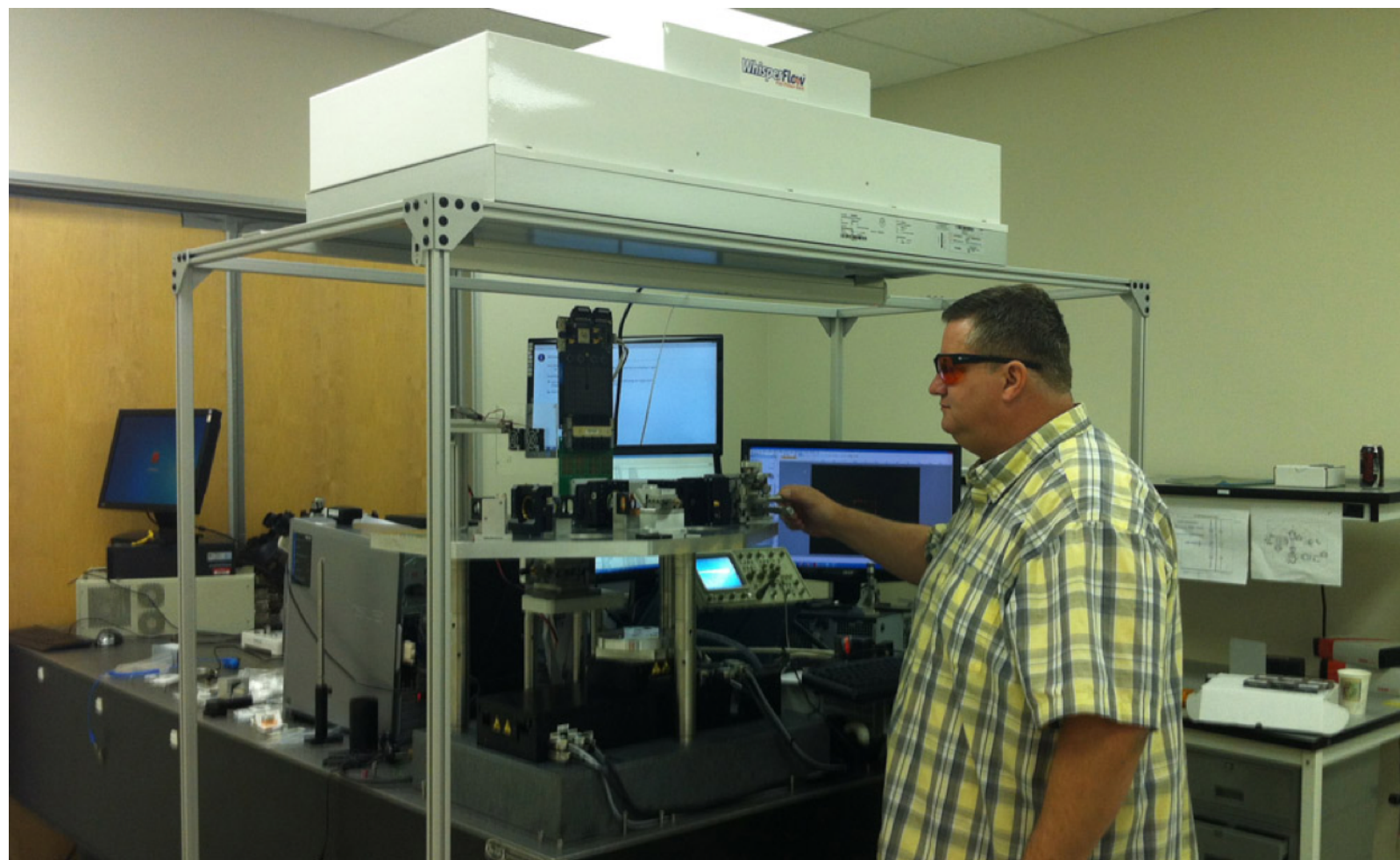
Group 47

Spots written simultaneously with a
single laser and spatial light modulator.
One micron spot size.
15 year old media performs as originally
specified/predicted

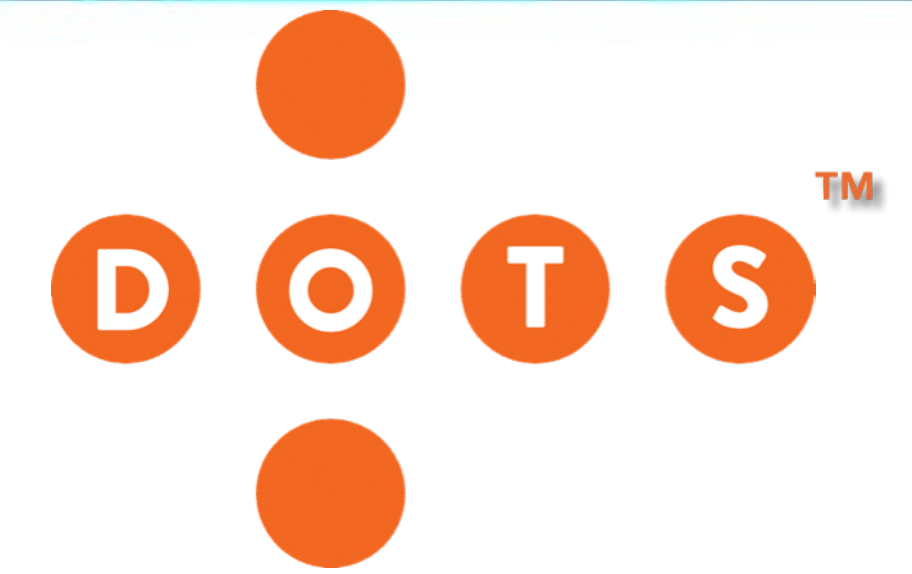


CIA Proof of Concept

- In 2015, Group 47 successfully completed a contract awarded by the CIA to build a laboratory prototype proving the DOTS technology.
- The milestones of the contract required the demonstration of writing and reading applications and document data in the DOTS visual format, and successfully writing and reading to DOTS metal alloy tape in the **Bit Plane Image preservation** format.



The Product



- Because the data is represented visually, as long as we have access to cameras, the data will always be recoverable
- **Bit Plane Image preservation** format ensures image and sound file recovery for centuries
- A visual representation means all hardware will be backwardly compatible to Generation 0
- Is extensible to other applications that require stable, accessible, unchangeable information (e. g. passports, access cards, credit cards)
- New, efficient design eliminates “serpentine” recording techniques, ensuring record speeds in excess of 1 GByte/sec within 18 months of 1st commercial ship
- Each unit of DOTS media will have factory-written, human-readable instructions for building a reader on the first few meters – Rosetta Leader

DOTS Archival Qualities

Because it's visual, hardware devices are backwardly-compatible for all previous generations

